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| APPLICATION NO. | FILING DATE | FIRST NAMED INVENTOR | ATTORNEY DOCKET NO. | CONFIRMATION NO. |
|--|-------------|----------------------|--|------------------------------------|
| 10/762,563 | 01/23/2004 | Ralf-Peter Peters | A-8890.RNOMP / sbs | 3199 |
| <div>7590 05/24/2007 Hoffman, Wasson & Gitler, P.C. Crystal Center 2 - Suite 522 2461 South Clark Street Arlington, VA 22202</div> | | | <div>EXAMINER SINES, BRIAN J</div> | |
| | | | <div>ART UNIT 1743</div> | <div>PAPER NUMBER</div> |
| | | | <div>MAIL DATE 05/24/2007</div> | <div>DELIVERY MODE PAPER</div> |

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

| | | | |
|------------------------------|-------------------------------|-------------------------------|--|
| Office Action Summary | Application No. 10/762,563 | Applicant(s) PETERS ET AL. | |
| | Examiner Brian J. Sines | Art Unit 1743 | |

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 06 February 2007.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-23 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-23 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|---|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

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DETAILED ACTION

Election/Restrictions

Applicant's election without traverse of group I comprising claims 1 – 23 in the reply filed on 2/6/2007 is acknowledged. Claim 24 has been canceled by the applicant.

Claim Rejections - 35 USC § 112

The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

Claims 12 – 18 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Claim 12 recites the limitation "the stopping means" in line 4. There is insufficient antecedent basis for this limitation in the claim.

Claim 13 recites the limitation "the stopping means" in line 3. There is insufficient antecedent basis for this limitation in the claim.

Claim 15 recites the limitation "the stopping means" in line 2. There is insufficient antecedent basis for this limitation in the claim.

Claim 16 recites the limitation "the stopping means" in line 2. There is insufficient antecedent basis for this limitation in the claim.

Claim 17 recites the limitation "the third channel" in line 2. There is insufficient antecedent basis for this limitation in the claim.

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

Claims 1 – 11, 20 and 23 are rejected under 35 U.S.C. 102(e) as being anticipated by Seki et al. (U.S. Pat. Appl. Pub. No. US 2002/0195463) (“Seki”).

Regarding claims 1 – 11, 20 and 23, Seki anticipates a microfluidic structure for metering amounts of liquid, wherein the microfluidic structure is comprising: a first channel, e.g., 21, and one second channel, e.g., 23; the first channel has one inlet and one outlet; near the outlet, the structure has a capillarity that is greater than or equal to the capillary in near the inlet; the second channel branches off from the first channel at a branched connection point; the second channel has a greater capillarity than the first channel at the branched connection point (see, e.g., paragraphs 84 – 97, 103 – 108 and 158 – 160; figures 5a – 5c). Seki anticipates the hydrophilic surface treatments at the transitions between channels (see, e.g., paragraphs 80 and 81). Seki anticipates the changing of the geometrical properties, e.g., channel cross-section, to change capillarity effects and therefore control fluid flow through the device (see, e.g., paragraphs 84 – 96). Seki anticipates the incorporation of two channel systems (see, e.g., paragraphs 20 – 26). Seki anticipates the incorporation of various stopping means, e.g., ().

FIG. 5(a)

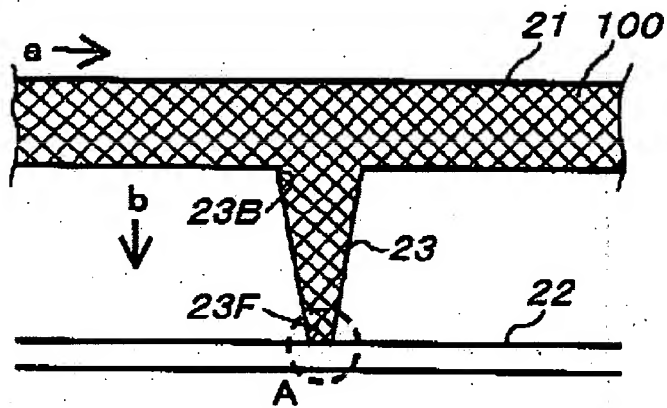


FIG. 5(b)

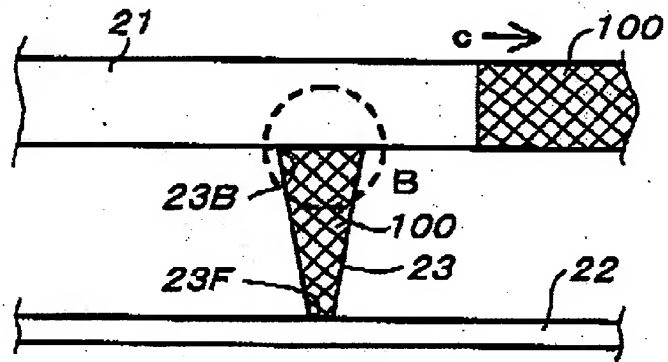
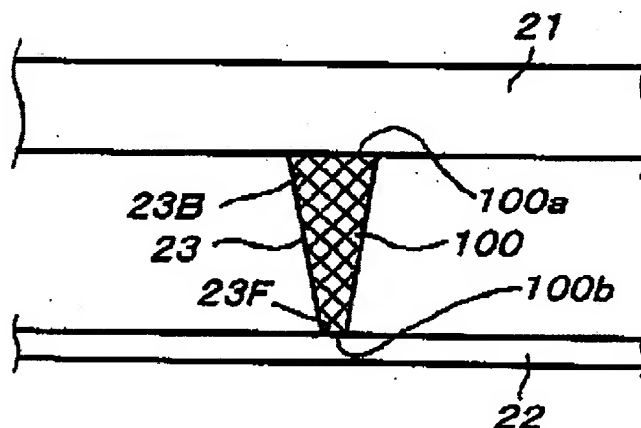


FIG. 5(c)***Claim Rejections - 35 USC § 103***

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

1. Claims 12 – 18 and 22 are rejected under 35 U.S.C. 103(a) as being unpatentable over Seki in view of Kellogg et al. (U.S. Pat. No. 6,063,589 A) (“Kellogg”).

Regarding claims 12 – 18, Seki does not specifically teach the incorporation of a stopping means, such as a capillary stop or microvalve, for controlling fluid flow within the disclosed device. The incorporation of various stopping means, such as capillary stops and microvalves, for providing fluid flow control within microfluidic devices are well known in the art. For example, Kellogg teaches the incorporation of a capillary stop, barrier or junction, and including valves, within a microfluidic device for facilitating fluid control within the device (see, e.g., col. 5, line 51 – col. 6, lines 66; col. 22, lines 17 – 63; col.47, lines 8 – 61; figures 15A – 15D; 21A – 21E). Therefore, it would have been obvious to a person of ordinary skill in the art to incorporate a stopping means as claimed with the disclosed microfluidic device for facilitating effective fluid flow control within the device.

Regarding claim 22, Seki does not specifically teach the incorporation of an aeration or vent channel within the disclosed device. Aeration or vent channels are common features of microfluidic devices that permit fluid flow within the device that are well known in the art. For example, Kellogg does teach the incorporation of aeration, vent or air displacement channels within microfluidic devices (see, e.g., col. 6, lines 7 – 13). Therefore, it would have been obvious to a person of ordinary skill in the art to incorporate the use of an aeration channel within the disclosed microfluidic device to facilitate effective fluid flow.

2. Claim 19 is rejected under 35 U.S.C. 103(a) as being unpatentable over Seki in view of Fuhr et al. (U.S. Pat. No. 6,465,225 B1) (“Fuhr”).

Regarding claim 19, Seki does not specifically teach the incorporation of a meander-shaped channel system structure. However, the incorporation of meander-shaped microchannel structures within microfluidic devices for facilitating for facilitating sample processing and

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analysis is well known in the art. For example, Fuhr teaches the incorporation of a meander-shaped channel structure within a microfluidic device for facilitating sample processing (see, e.g., col. 6, lines 44 – 65). Therefore, it would have been obvious to a person of ordinary skill in the art to incorporate a meander-shaped channel system structure as claimed with the disclosed microfluidic device for facilitating effective sample processing.

3. Claim 21 is rejected under 35 U.S.C. 103(a) as being unpatentable over Seki in view of Boschetti et al. (U.S. Pat. No. 7,144,743 B2) (“Boschetti”).

Regarding claim 21, Seki does not specifically teach the incorporation of an adsorbent material within the disclosed device. Seki does teach that a reagent 300 is positioned within the channel structure of the device for facilitating glucose analysis (see, e.g., paragraph 135; figure 10(d)). The utilization of adsorbents for carrying reagents within analytical microfluidic devices is well known in the art. For example, Boschetti teaches the use of absorbents with analytical microfluidic biochip devices for facilitating sample analysis (see, e.g., col. 5, lines 15 – 36). Therefore, it would have been obvious to a person of ordinary skill in the art to incorporate and absorbent material as claimed with the disclosed microfluidic device for enabling effective sample processing and analysis.

Conclusion

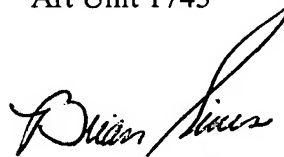
Any inquiry concerning this communication or earlier communications from the examiner should be directed to Brian J. Sines whose telephone number is (571) 272-1263. The examiner can normally be reached on Monday - Friday (11 AM - 8 PM EST).

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If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Jill A. Warden can be reached on (571) 272-1267. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

Brian J. Sines
Primary Examiner
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A handwritten signature in black ink, appearing to read "Brian J. Sines", is written below the printed name and title.